CALIFORNIA PUBLIC UTILITIES COMMISSION

Water Division

RATE DESIGN AND TARIFF NUMBERING FOR WATER AND SEWER SYSTEM UTILITIES

Standard Practice U-7-W

San Francisco, California
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77692

I. INFORMATION NEEDED

1. After the revenue requirement has been determined (see Standard Practices U-3-W or U-3-SM), rates need to be designed to allow the utility the opportunity to collect the authorized revenues. In order to design water and sewer rates, the analyst needs the following information:

(1) Revenue requirement

(2) For metered rates, the amount of revenue requirement due to fixed costs (fixed costs are those that do not change with the amount of water delivered; fixed costs include profit)

(3) Number of customers for each connection size

(4) Expected annual water sales (water produced and purchased less unaccounted for water)

(5) If rates are to be phased in, the amount of revenues approved for the first year and subsequent years[1]

II. CALCULATING FLAT RATES

2. The Commission has long supported metering of water service[2] and state law requires that all new dwellings have water meters from Water Code Section 110. Also, either the utility or the customer, at their own expense, may install a meter[3]. Consequently there should be no new flat rate customers.

Normally the flat rate will be equal to the average bill for a metered customer of the same connection size unless the utility knows approximately how much water its flat rate customers use, in which case, the flat rates should reflect the expected use.

[1] D.60648, August 30, 1960, Crestmore Village Water Company

[2] D.328, November 2, 1912

[3] D.608, April 25, 1913, Finding of Fact 1.

Where more than one dwelling exists on the same property, the rate for the additional buildings should be the same as the rate for the first building unless the property has landscaping that requires watering with utility water. In that case the flat rate for any additional buildings should be set at the average bill minus one-half of the average amount paid by metered customers for the water itself (one half of the average use times the commodity charge).

III. CALCULATING METERED RATES

3. An Order Instituting Investigation (OII)[4] was opened on November 21, 1984 to determine whether the existing rate design policy for water utilities resulted in a realistic and appropriate distribution of revenues between the service charge and consumption charge. There was no standard definition of fixed costs within the water industry at that time. The rate design policy was based on a service charge (to recover the costs associated with providing customers access to water) and the commodity charges (to recover the costs of the water delivered to a customer). Staff recommended a flatter rate design policy with the elimination of lifeline water service.

The OII resulted in D.86-05-064 of May 28, 1986, which modified water rate design as follows:

(1) A flatter rate design policy shall be adopted as statewide rate design policy for water utilities.

(2) The flatter rate design policy shall incorporate the following guidelines:

   a. Service charges shall be set to allow utilities to recover up to 50% of their fixed cost.

   b. Lifeline rates shall be phased out.

[4] Order Instituting Investigation I.84-11-041

c. There may be multiple commodity blocks, with the number of commodity blocks to be limited to no more than three blocks.

d. Seasonal rates may be applied in resort areas.

(3) This rate design was implemented by a memorandum[5] that summarized the provisions of the new rate design. It noted that:

a. No customer should receive an increase more than twice the overall increase

b. Service charges shall be set to cover 50% of fixed costs.

c. For companies that presently have over 50% of fixed costs in the service charge, staff can discuss in the resolution why that percentage is justified (the decision did not order a reduction if fixed costs exceeded 50%)

d. Calculate fixed costs by subtracting all variable costs from the revenue requirements. Variable costs included: Purchased power, purchased water, chemicals, income taxes, uncollectibles, any other cost which obviously vary with usage.

e. The maximum number of commodity blocks is three. One block shall be used whenever possible.

f. Lifeline rates shall be phased out.

g. Seasonable rates can be used in resort areas but only when no other equitable rate design is available.

h. Staff must review conservation plans in each general rate case.

[5] Memorandum to all Water Branch Technical Personnel dated December 9, 1986 from Wes Franklin, Chief, Water Utilities Branch, Subj: Rate Design Policy Established by D.86-05-064.

4. This rate design was reviewed in the Risk OII proceeding (I.90-11-033) and modified to allow recovery of 50% of the fixed costs in the service charge for Class A and B water companies, 65% for Class C and 100% for Class D[6]. When any regulated water utility acquires an inadequately operated and maintained small water utility, it may also design rates to recover up to 100% of the fixed costs in the service charge[7].

5. D.85-06-064 also determined that the meter service charge ratios were out of date and directed the Water Branch to send a letter to all Class A water utilities proposing new ratios. Branch sent the letter on December 6, 1990 proposing to spread the service charge over the meter sizes in proportion to the maximum capabilities of the meters themselves to handle flows. The ratios adopted are in proportion to the upper limits of normal test flows as shown in G.0. 103, Section VI.3.b[8]. These ratios are as follows:

Meter Size	Ratio
5/8x3/4 inch	1.0
3/4 inch	1.5
1 inch	2.5
1-1/2 inch	5.0
2 inch	8.0
3 inch	15.0
4 inch	25.0
6 inch	50.0
8 inch	80.0
10 inch	115.0
12 inch	165.0
14 inch	225.0

[6] D. 92-03-093, March 31, 1992, O.P. 6. Class A companies serve over 10,000 service connections, class B 2001 through 10,000, class C 501 through 2000 and class D 500 service connections or less.

[7] D.99-10-064, October 21, 1999, Appendix D, para. 3.03 B

[8] January 18, 1991 Water Utilities Branch letter, "Rate Design Policy -- Service Charge allocation by meter size"

6. Where a larger size meter is required because the dwelling has a sprinkler system, the customer shall be billed at the rate for the meter size that would have been required without the sprinkler system (some modest extra charge may be included for the larger meter.)

Because transitioning to these service charges may cause some customers to pay a higher than average rate increase, staff has limited rate design changes to provide that no customer will pay over twice the system average increase. This allows the water company to "phase in" to the service charge ratios given above.

7. Rates for water and sewer system companies that serve summer or vacation homes should be designed so that the transient customers pay their fair share[9] of the fixed and variable costs of the system. This can be done by imposing an annual service charge, paid in advance, and by metering and billing quarterly or monthly for water use[10].

8. Calculate the service charge by first determining the amount of the revenue requirement that is a result of fixed costs, then multiply by the proper percentage to get the amount that needs to be recovered by the service charge. For Class A and B water companies the percentage is 50%, for Class C it is 65% and for Class D it is 100%. These dollars are then spread to different meter sizes as follows:

[9] see D.52450 dated January 4, 1956 in A.36896; D.52903 dated April 17, 1956 in A.37103; and D.58250 dated April 7, 1959 in A.40517

[10] D.66729, January 28, 1964 in A.45164

a. First multiply the number of services of each size by the ratios shown above to determine “meter-equivalents”. Sum the products and divide the sum into the dollars to be spread. The result is the service charge for a 5/8x3/4 inch meter.

b. The other service charges are calculated by multiplying the charge for the 5/8x3/4 inch meter by the meter ratios.

IV. COMMODITY CHARGE

9. The commodity charge must recover the remaining revenues. Calculate this charge by dividing the remaining revenues by the expected annual sales.

V. CONSERVATION RATES

10. During times of drought or other shortage in water supply the Commission may adopt “increasing block” rates. This rate design sets a “reasonable” amount of water use and charges customers who use more than this amount a higher commodity charge (see D.00-03-053 for an example). These types of rate designs are much more volatile that the Commission’s standard rate design and may also involve a revenue adjustment mechanism which tracks revenues and allows the utility to make up or give back revenues that were less or more than the adopted revenue requirement.

VI. LIMITS ON RATE INCREASES

11. There is a Commission policy that puts limits on rate increases. It is described in a memo titled "CAPS Standard Procedure", dated February 22, 1983. It provides guidelines that allow a maximum of 50% increase in the first year, with step rates being authorized for the second year (that recovers accrued interest on the deferred revenues if that increase doesn't exceed

50%) and the third year to establish proper rates[11]. This process should be used only where the high rate increase also results in a high bill. Otherwise the customers will be confused about the rates to no good purpose.

VII. RECOVERY OF PAST REVENUES

12. When the Commission allows water companies the opportunity to recover revenue from the time of the effective date of a decision or from the first day of the test year, calculate the lost revenue and the resulting surcharge as follows:

> (1st test year revenue at authorized rates minus 1st test year revenue at present rates) times the number of days between the effective date of the rates and the effective date of the GRC decision plus 5 days and divide this product by the adopted annual sales times the number of years of recovery.

Lost Revenue = (Rev. at auth.rates --Rev. at pres. rate) x (lost days +5)/365

$$\text{Surcharge} = \frac{\text{Lost revenue}}{\text{water consumption x number of years for recovery}} = \$/\text{Ccf}$$

The lost revenue is collected through a surcharge applied to the quantity rates over either a 12-month or a 24-month period depending on the amount of surcharge and its impact on the overall rate increase.

VIII. RATE DESIGN – SEWER

13. Sewer rate design is similar to flat rate water rate design, all similar customers should pay the same rate, and customers who pay different rates should do so based on differing costs to the utility to provide service. Sewer load may be estimated or calculated based on water use in the building, and thus becomes the basis for the rate.

[11] See also D.54818, April 9, 1957 in A.36646 and D.60648, August 30, 1960 in A.41961

IX. UTILITY TAXES

14. Since the passage of Proposition 13, many municipalities have levied a "utility tax". This tax is usually collected as a percentage of the utility bill. These taxes should be a separate line item on the bill and shall only apply to the customers within the municipality imposing them.

X. UTILITY REIMBURSEMENT ACCOUNT

15. Sections 402 and 432 et. seq. of the Public Utilities Code require the Commission to assess a fee on each public utility it regulates. For water and sewer system utilities that fee is 1.4% of gross utility revenue. Gross utility revenue includes all surcharges and Safe Drinking Water Bond Act or State Revolving Fund revenues. It does not include utility taxes or charges that are set by and passed on to a governmental agency.

XI. PROCEDURE FOR CALCULATING THE SECOND TEST YEAR AND ATTRITION YEAR RATES FOR WATER UTILITIES WITH THREE YEAR RATE CASE CYCLE

16. In general rate cases for most large water utilities, there are two test years and one attrition year. The calculation for the revenue increase for the first year is the difference in revenues between the adopted present rates and the authorized increased rates at the adopted number of customers and sales of all the service classes. The revenue increase for the second test year is adjusted for customer growth in the second test year, so it is not just the mathematical difference between revenues of the first and second test years. The revenue for the attrition year is calculated by applying the operational attrition plus financial attrition times the adopted rate base times the net-to-

gross multiplier. The revenue increase for the attrition year is the difference in revenues between the attrition year and the second test year.

17. For the second test year, the increase in gross annual revenues consists of two parts: the increase due to customer growth and the increase due to results of operation such as increases in expenses and rate base. However, an increase in gross annual revenues due to customer growth is not an increase in rates, even though it increases gross annual revenues. This increase in customers, therefore, needs to be compensated for in determining the annual dollar and percent increases. The method shown on the following pages shows how to calculate the actual gross revenue increase without the influence of customer growth.

TO DETERMINE REVENUE INCREASES

.

Obtain number of customers and total consumption for each block for both test years.

For First Test Year

Obtain adopted present revenues from decision. ($2,383,200)

Obtain authorized revenues from decision. ($2,533,900)

Calculate revenue and percent increase. ($150,700; 6,32%)

For Second Test Year

Calculate revenue using second test year customers and first test year authorized rates. ($2,555,672)

Obtain authorized revenue from decision. ($2,649,800)

Calculate dollar and percent increase using (a) and (b).

See attached example.

So-Cal Water Co.
San Gabriel District

TOTAL METERED SERVICES

	1998				1999				
	Number Customers	Authorized Rates	Revenue	:	Number Customers	@1998 Rates Rates	Revenue	Authorized Rates	Revenue
5/8	10023	4.60	553270	:	10271	4.60	566959	4.80`	591610
3/4	44	4.90	2587	:	44	4.90	2587	5.10	2693
1	870	7.00	73080	:	872	7.00	73248	7.30	76387
1 1/2	84	9.25	9324	:	84	9.25	9324	9.60	9677
2	178	14.00	29904	:	178	14.00	29904	14.60	31186
3	16	25.50	4896	:	16	25.50	4896	26.50	5088
4	9	33.00	3564	:	9	33.00	3564	34.00	3672
6	3	63	2268	;	3	63.00	2268	66.00	2376
8	0	87	0	:	0	87.00	0	91.00	0
10	0	126	0	:	0	126.00	0	169.00	0
sub	11227		678893	:	11477		692750		722689
				:					
3	332600	0.5853	194684	:	334100	0.5853	195562	0.6055	202284
Over 3	2805500	0.5853	1642171	:	2817500	0.5853	1649195	0.6055	1705884
sub	3138100		1836855	:	3151600		1844758		19088168
				:					
Total Meter Rev.			2515748	:			2537508		2630856
				:					
				:					
Flat Rate Rev.				:					
Prv.Fire	35	27.70	11664	:		27.77	11664	27.77	11664
Other			6500	:			6500		7300
Total Flat Rev.			18164	:			18164		18964
				:					
TOTAL REVENUE			2533912	:			2555672		2649819
				:					

1998 Present Rev.	2383912			
1998 Auth. Rev.		2533900		
$ Increase		150700		
% Increase		6.32		
1999 Rev. @ new 1998 rates			2555672	
1999 Auth. Rev				2649800
$ Increase				94128
% Increase				3.68

18. For the attrition year, apply the revenue requirement resulting from the attrition year calculation (see below), minus any over earnings revealed by the weather normalized means test, to the second test year quantities given above.

CALIFORNIA-AMERICAN WATER COMPANY
MONTEREY DIVISION - 2002 RATE CASE

ATTRITION ALLOWANCE (000's OF $)

ATTRITION ALLOWANCE CALCULATION

	2003	2004
Rate of Return at Present Rates	7.02%	6.47%
Rate of Return Percent Decrease		0.55%
	2004	2005
Requested Rate of Return	8.62%	8.56%
Change in Requested Rate of Return		-0.06%
Total Increase/(Decrease) in Rate of Return		0.49%
Applied Against 2004 Weighted Average Rate Base		$80,729.4
Gross Increase		$394.8
Times Net-to-Gross Multiplier		1.74356
Total Attrition Allowance - Year 2005		$688.8
Percentage Increase		2.41%

APPENDIX A - GUIDE TO NUMBERING RATE SCHEDULES

1. The rate schedule number will indicate the class of service as shown in the following tabulation. (These numbers have been selected to correspond generally to the revenue classes in the present uniform system of accounts for water utilities.)

Schedule No	Class of Service
1.	Metered service.
2.	Flat rate service.
3.	Irrigation service.
4.	Private fire protection service.
5.	Public fire hydrant service.
6.	Resale service.
7.	Service to governmental agencies.
8.	Interdepartmental service.
9.	Other water service (such as construction service).
10.	Service to company employees.

2. Where appropriate, the number indicating the class of service will be followed by one or more of the suffixes shown below to further define the type of service covered by the schedule in those situation when the service rendered may be somewhat different than might be expected for the particular type of service.

Suffix	Type of Service
A	Annual service.
C	Construction service under Schedule 9.
E	Special Charges.
F	Flat rate service for other than service under Schedule 9.
I	Industrial service, under Schedule 9.
L	Limited service, as to area or customers.
M	Measured service for other than service under Schedule 1.
O	Optional service.
R	Residential service.
S	Seasonal service.
T	Treated water (other than service under Schedule 1 or 2) utilized for human consumption.
U	Untreated water for other than irrigation service.
W	Off season or winter irrigation service.
X	Temporary service.
Z	Surplus water sales.

3. When a tariff area has more than one rate zone (such as a lower and an upper elevation zone) each rate zone will be designated by a single identifying capital letter prefix followed by a hyphen placed ahead of the rate schedule number indicating the class of service. For example, the zone prefixes for the Valley Rate Zone and the Hill Rate Zone could be V- and H-, respectively, followed by the class of service number and, where appropriate, the type of service suffix. If the utility has more than one system, the zone prefix will follow the system prefix.

4. For a water utility which has different rates established for its separately operated systems (such as districts or divisions of a multi-system utility) the rate schedule numbers applicable to each system will be further codified by use of a system prefix comprising the first two letters of the system's name (tariff area), both capitalized. This prefix will be separated from the remainder of the schedule number designation by a hyphen. If the names of two systems have the same first two letters, the second letters should be changed to other distinguishing letters that will maintain the alphabetical sequence of the full names. For example, the designations for Normandy and Norwalk could be NM and NW.

5. Where a rate schedule is universally applicable throughout all of the systems of a multi-system or district utility, the schedule number should have the prefix AA (applicable all areas), and the schedule heading should show that it is of general application, as follows:

Schedule No. AA-9FC

All Tariff Areas

CONSTRUCTION AND OTHER TEMPORARY FLAT RATE SERVICE

6. In rate schedules for individual systems of a multi-system utility, the schedule number will be followed on separate lines by the tariff area name (and rate zone, where required) and by the class of service title, as indicated below:

Schedule No. BAC – 3ML

Bakersfield Tariff Area

Crest Zone

LIMITED MEASURED IRRIGATION SERVICE

7. Some examples of rate schedule numbers are:

Schedule No. 1	(metered service, single-system utility)
Schedule No. 2S	(seasonal, flat rate service, single-system utility)
Schedule No. U-3F	(flat rate irrigation service, upper zone, single-system utility)
Schedule No. BA-3M	(Bakersfield tariff area, measured irrigation service)
Schedule No. VA-9MI	(Vacaville District, metered industrial service)
Schedule No. SUH-1X	(Suburban tariff area, Hill Zone, temporary metered service)

8. The following material lists typical wording for the "applicability" portion of the rate schedule.

Appendix A
Guide to Numbering Water Tariff Schedules

Schedule No	APPLICABILITY
1	Applicable to all metered water service.
1A	Applicable to all metered water service furnished on an annual basis
1S	Applicable to all metered water service furnished on a seasonal basis.
2	Applicable to all flat rate water service.
2A	Applicable to all flat rate water service furnished on an annual basis.
2LX	Applicable to all flat rate water service furnished on a limited temporary basis.
2R	Applicable to all flat rate residential water service.
2RA	Applicable to all flat rate residential water service furnished on an annual basis.
2RS	Applicable to all flat rate residential water service furnished on a seasonal basis.
2X	Applicable to all flat rate residential water service furnished on a temporary basis.
3FL	Applicable to all flat rate irrigation service furnished on a limited basis.
3M	Applicable to all measured irrigation service.
3ML	Applicable to all measured irrigation service furnished to the lands owned by John A. Doe as of January 1, 1942.
4	Applicable to all water service furnished to privately owned fire protection systems.
5	Applicable to all fire hydrant service furnished to municipalities, organized fire districts and other political subdivisions of the State.
6	Applicable to all water service furnished for resale purposes.
7F	Applicable to all flat rate water service furnished to public parks.
9E	Applicable to all service furnished under schedules for metered and flat rate water service. (For service establishment or other special charges.)
9FC	Applicable to all flat rate water service furnished for general construction.
9M	Applicable to all tank truck water sales.
9MC	Applicable to all measured water service furnished for street paving, grading and trench flooding and for delivery to tank trucks.
10R	Applicable to all residential water service furnished to regular and pensioned employees of the company.

Note: Other specialized schedules shall follow the same order of designation outlined above, i.e., first, flat rate or metered; second, purpose or use of water; third, limitations.

9. Some examples of territorial descriptions are given below. The phrase "and vicinity" will usually be included in the territory description.

TERRITORY

Los Altos and vicinity, Santa Clara County.

Keeler and vicinity, Inyo County.

Graeagle and vicinity, located approximately 12 miles southwest of Portola, Plumas County.

Tracts Nos. 1187 and 1188, and vicinity, located three miles north of Simi, Ventura County.

Tahoe Valley Center, Gardner Mountain Subdivision, Tamarack Subdivision and Tucker Subdivision, and vicinity, located in Tahoe Valley, El Dorado County.

Portions of Bellflower, Lakewood and Paramount, and vicinity, Los Angeles County.

Tracts Nos. 9389, 9775, 9856 and 1138, located in portions of Downey and Pico Rivera, and vicinity, Los Angeles County.